

(19)日本特許庁 (JP) (12) 公開特許公報 (A) (11)特許出願公開番号
特開平5-307310
(43)公開日 平成5年(1993)11月19日

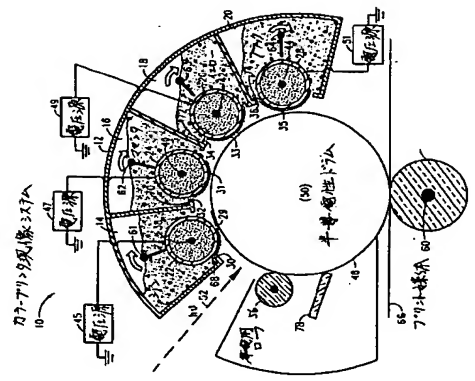
(51)Int.Cl. ⁴		機別記号		庁内整理番号		技術表示箇所	
G 0 3 C	15/01	1 1 3	Z				
B 4 1 J	2/525						
G 0 3 C	15/00	1 1 5					
				7339-2C	B	4 1 J	3/ 00

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(32)優先日	1991年12月17日		
(33)優先権主張国	米国 (US)		

(54)【発明の名称】 電子写真式カラープリンタシステム

(57)【要約】 (修正有)
【目的】 ロータリにカラーナートを付着させ、このトナーで光導電性ドラム上の静電潜像を現像する静電式電子写真式カラープリンタで、現像を行う際にローラをドラムに対して移動させる必要がないようにする。

【構成】 シェンアン、マゼンタ、イエロー、ブラックのトナーが入っているコンパートメント14、16、1、8、20内でローラ22、24、26、28が回転し、これらのローラの表面にはトナーが薄く付着した状態で光導電性ドラム50の静電潜像が形成されている表面48の近傍を通過する。ドラム50の今回の回転で現像を行いたい他のカラートナーが付着しているローラ(22～28の中の1つ)にだけ電圧脈45～51から交流及び直流電圧を印加することにより、当該ローラ上のカラートナーが対向する静電潜像に選択的に飛び移る。



(2) 特開平5-307310

【特許請求の範囲】
【請求項1】 下記(a)ないし(c)を含んでなる電子写真式カラープリンタシステム：
(a) シェンアン、イエロー、マゼンタ、ブラックのカラートナーを供給する手段；
(b) 前記トナーと光導電性ドラムの表面との間であって前記光導電性ドラムの表面から予め定められた距離の固定位置に設けられたシェンアン、イエロー、マゼンタ、ブラックの現像ローラ；
(c) 前記現像ローラに接触され、前記現像ローラを回転しながら前記現像ローラを交流及び直流信号で選択的に駆動することによって帯電したカラートナーを前記現像ローラの表面に送り届け、もって前記カラートナーを前記光導電性ドラムの表面に選択的かつ静電的に射出する手段。

【発明の詳細な説明】
【0001】
【産業上の利用分野】 本発明は、広義には、レーザープリンタとしても知られている電子写真式カラープリンタに関し、より詳しくは位置固定型の現像ローラを使用した射出型電子写真式カラープリンタ (projection type of electrophotographic color) に関する。

【0002】
【従来技術及びその問題点】 本願においてプリントされる媒体を制御するために有用かもしれない種々の転写運動制御方法が、1990年8月2日出願の出願番号07/561,831の「電子写真式カラープリンタにおける紙の幅及びミスマッチを補償するための方法及び装置」という名称の発明、1991年9月12日出願の出願番号07/758,011の「電子写真式プリンタにおける媒体の厚さを低減させるための改良された方法及び装置」という名称の発明、及び1991年12月12日出願の出願 (ケースNo. 189155) の「電子写真式カラープリンタ方法及び装置」という名称の発明に記載されている。

【0003】 電子写真式カラープリンタの分野においては、光導電性ドラムの表面にシェンアン、イエロー、マゼンタ及びブラックのカラートナーを付着させるためにシェンアン、イエロー、マゼンタ及びブラックの各現像ローラを動かして近接する光導電性ドラムと接触、離脱させることが知られている。これらのカラートナーは、光導電性ドラムの表面へ選択的に付着させられ、そこで現像されて、光導電性ドラムの表面上にカラーイメージを生じ、次にこれらのカラーイメージはドラムに接するプリント媒体へ順次転写される。

【0004】 光導電性ドラムの表面に対してこれらの現像ローラを接触、離脱させるこれらの従来技術によるカラー現像システムの1つの欠点は、現像ローラの物理的運動を制御するためにモータで駆動されるカム等が必要になるか、あるいはシェンアン、マゼンタ、イエロー及びブ

ラックの現像ローラを光導電性ドラムに順次接触させるために回転カラーゼンが必要になることである。いずれの場合にも、高速度で制御された運動をこれらの現像ローラに与えるために必要とされる機械的精度と高いコストに関連した機械上の欠点に伴う。従って、本発明が指しているものは上述したような従来技術による電子写真式カラープリンタの欠点を解消することである。

【0005】
【目的】 本発明の一般的なまた主要な目的は、光導電性ドラムの表面に近接させて固定位置に設けられた現像ローラを用いる新鋭な構成を有する新規で改良された射出型の電子写真式カラープリンタを提供することにある。このようにすれば、回転運動以外の機械的運動をこれらの現像ローラに与える必要がなく、この方法によってカラープリンタシステムにおける従来技術のカラーゼンやカム駆動現像ローラに付随する上述のような欠点が解消される。

【0006】 本発明の他の目的は、上述したような種々の電子写真式カラープリンタであって、比較的に単純かつ経済的であり、また動作の信頼性が高く、可動部及び保守の必要をできるだけ小さくした新規で改良された電子写真式カラープリンタを提供することにある。

【0007】 本発明の他の目的は、上述したような種々の電子写真式カラープリンタ及び電子写真式カラープリンタ方法であって、色平面が相互に正確に接合されるために光導電性ドラムの位置及び形状がそれほど重要ではない新規で改良されたカラープリンタ及びカラープリント方法を提供することにある。

【0008】
【概要】 上述の目的を達成するため、本発明の一例は、シェンアン、イエロー、マゼンタ及びブラックのカラートナーを設け、シェンアン、イエロー、マゼンタ及びブラックの現像ローラを上記したカラートナーとドラムの光導電面との間であって光導電性ドラムの表面から予め定められた距離にある固定された位置に設け、各々のカラートナーを射出 (project) する。この技術を使用することにより、光導電性ドラムの近接した表面へ選択的に静電的にトナーを射出 (project) する。この技術を使用することにより、シェンアン、イエロー、マゼンタ及びブラックのカラートナーは、レーザー光ビームまたは同様の現像信号源を用いて選択的に放電してある光導電性ドラムの表面上で順次現像される。カラープリンタ内で現像されたイメージは、次に、光導電性ドラムの表面と近接する転写ローラの間を通過するプリント媒体の表面へ順次転写される。

【0009】 上述した本発明の概要は、図面に概念的に示した本発明の好適な実施例の以下の記述から、その

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送脱することなく、当業者が図1及び図2に対する多くの機械的な設計変更を行うことができる。

【0019】

【効果】以上詳細に説明したように、本発明によれば現像ローラを光導電性ドラムに接触・離脱させるように移動させる必要がなくなるので、設計・製造・保守が容易な電子写真式カラープリンタを提供することができる。

【図面の簡単な説明】

【図1】本発明の一実施例によるカラー現像システムを示す概念的断面図。

【図2】図1のカラー現像システムがカラーレーザープリンタ中での様に収容されるを示す斜視図。

【符号の説明】

10：カラープリンタ現像システム
12：カニューレ

14、16、18、20：カラートナーコンパートメント

22、24、26、28：現像ローラ

29、31、33、35：トナー

30、32、34、36：開口部

38、40、42、44：中心軸

45、47、49、51：電圧線

48：表面

50：光導電性ドラム

58：転写ローラ

56：帯電用ローラ

60：中心軸

61、62、63、64：トナー攪拌ブレード

66：プリント媒体

68、70、72、74：ドクターブレード

80：ハウジング

82：入力紙トレイ

84：出力紙排集ビン

86：側壁

90、92：定着ローラ

94、104：用紙ガイド部材

96、98、100、102：用紙ガイドローラ

106：紙傾向部材

110：紙出口ポート

40

られている。図示のプリンタハウジングの手前側の側壁

86は、内部にある図1のカラー現像システムに係動

を制御するための用紙ガイド機構に対する機械的な位置

関係を有することができ、さらに、これらの用紙ガイド機

構は、図示の転写ローラ58に近接して取り付けられた光

導電性ドラム50を参照して上に説明したように、現像

ローラと電流が同時に印加されるカラートナーを排出するロ

ータナーを受け取るにつれて、紙66は光導電性ドラ

ム50と転写ローラ58との間を挟んで4回送られる。

【0017】図2に示す用紙ガイドシステムは、更に、

一対の出力定着ローラ(output fuser roller)90及び

92を含む。これらの定着ローラ90、92は上述の4

回送経路に沿って360°の経路に渡る工程で、シア

ン、イエロー、マゼンタ及びブラックのカラーイメージ

を周知の方法により順次紙62に溶解する。この工程で

は、紙62はまず第1の湾曲した用紙ガイド部材94の

内面に沿って送られ、次に第1の湾曲した用紙ガイド

部材94と96と98の間を通り、更に第2の湾曲した

用紙ガイド部材104がまわりの配置された第2の湾曲

した用紙ガイド部材100と102の間を通って送られ

る。紙62は上述の360°の経路を通る連続して起こ

る3回の工程を完了すると、紙62は定着ローラ90、9

2から上向きになった紙傾向部材106の表面に沿って

矢印108の方向に移動させられ、紙排集ビン84の遠

端側の紙出口ポート110から送り出される。

【0018】本発明の機構及び断面から送脱することな

く、上述した実施例に対して種々の修正を加えることが

できる。図1及び図2に簡略化して概要を示した本発明の

カラー現像システムは、カラーイメージ現像操作の一般

原理を例示説明することを目的としたものであり、何ら

かの特定のハードウェアや設計、あるいはシアン、イエロ

ー、マゼンタ及びブラックの複色法のみによる使

用に限定することを意図したものではない。従って、

このように理由により、ここに書かれた好ましい実施例は

簡略化された概念的な図面に限定されるものではなく、

特定の構成上のハードウェアに限定されるものではなく、

その設計や選択や変更は当該技術に熟練した設計者やエ

ンジニアがなされる。従って、本願発明請求の範囲から

る射出現像システムに適用することができる。

【0013】この半導体を用いると、現像ローラ22、2

及び26及び28がコンパートメント14、16、18

及び20内で近くにあるシアン、マゼンタ、イエロー及

びブラックトナーの中を動くときに、着色されたトナー

がこれらのローラの表面に電気的にまた静電的に引きつ

けられ、引き付けられたトナーは、次に、これらの現像

ローラの表面の1つに交流及び直流電圧が選択的に印加

されたときだけ、静電気の力により光導電性ドラム50

の表面48へ射出される。このようにして、各着色トナ

ーが選択的に光導電性ドラム50の表面に射出され、光

導電性ドラム50の表面には、レーザー光源（図示せ

ず）からのレーザービーム52によって生じた潜像がカラ

ーイメージとして現れる。このような射出型現像システ

ムとしては、例えば上に引用した Takahashi 他の特許文

中に開示され、キャノン株式会社によって開発されたも

のがある。

【0014】図1に示すカラー現像システムは、また、

シアン、イエロー、マゼンタ及びブラックの各コンパー

トメント14、16、18及び20内の図示位置に設け

られた回転可能なトナー攪拌ブレード61、62、63

及び64を有し、これらの攪拌ブレードは現像ローラ2

2、24、26及び28の表面でのトナーの均一性を維

持するためにトナーコンパートメント内で所望量の攪拌

が行われるよう作用する。図1のカラー現像システム

は、光導電性ドラム50の表面に所望レベルのトナー電

荷を有すると共に、個々に射出させられるカラーローラ

所望のレベルの静電吸引力を与えるための帯電用ローラ

56を有する。図1の射出システム10は、更に、中心

軸60の回りに回転可能に取り付けられた転写ローラ5

8を有し、この転写ローラは図示のようにプリント媒体

66または他の適切な中間転写部材（図示せず）が通過

する位置において、光導電性ドラム50の表面48に極近

接するよう位置決めされる。

【0015】従って、その動作を見るに、プリント媒体

66は、シアン、マゼンタ、イエロー及びブラックの各

色毎に360°の経路を移動して、これらの各色に現像

したイメージが光導電性ドラム50の表面から媒体66

へ順次転写される。プリント媒体66は一連の工程の各

々に、以下に図2により説明する定着ローラ90と92

の間に案内され、ここで合成カラーイメージがプリント

媒体66の表面に定着された後、周知の紙送り/制御技

術を用いた出力紙排集トレイまたはビンへ送り込まれ

る。上述したカラープリンタの過程における紙の運動を制

御するための適切な制御技術は、本願出願人による前記

の特許出願に開示されている。

【0016】次に、図2には、電子写真式カラープリン

タのハウジング80が示されており、これには、例えば

本願出願人の LaserJet プリンタで現在使用されている

50 形態の入力紙トレイ82及び出力紙排集ビン84が設け

新規な特徴及びそれに伴う長所とともにより良く理解さ

れるようになるであろう。

【0010】

【実施例】図1において、全体を記号10で示すカラー

プリンタ現像システムには、図示のようなテーパ形状の

複数のカラートナーコンパートメント14、16、18

及び20を有する。固定位置、つまり回転しないカヌー

ゼル12が各含まれている。これらの各カラートナーコン

パートメント14、16、18及び20は、シアン

ン、マゼンタ、イエロー及びブラックの着色トナーを収容

し、またその内部には、これらの各ケーパ形状コンパート

メント14、16、18及び20の底壁の開口部30、

32、34及び36に近接した固定位置に回転可能に取

り付けられた1個の現像ローラ22、24、26及び2

8がそれぞれ設けられている。

【0011】各現像ローラ22、24、26及び28

は、それらの中心軸38、40、42及び44の回りに

それぞれ回転可能であり、またこれらの各ローラはそれぞ

れ別個の電圧線45、47、49及び51に接続されて

いる。これらの電圧線45、47、49及び51によっ

てローラ22、24、26または28のいずれかの選択

された現像ローラ上には発生する電圧は交流成分と直流成

分から成る。直流成分は約400Vで、光導電性ドラ

ム50の表面48上の増幅領域の1000Vの電圧と非

イメージ領域の600Vの電圧の間に設定すべきであ

る。このように設定された電圧は、負に帯電したトナー

29、31、33及び35を電界によって駆動して、光

導電性ドラム50上のイメージ領域に現れるようにす

る。更に、Photographic Science and Engineering 巻

26、第5号、1982年9月/10月、に記載された

Takahashi 他による "Mechanism of Canon Toner Proj

ectionDevelopment" という英語の論文中に詳細に説明

されているように、イメージの出現を強化するため約2

00Hz、1000Vppの交流電圧が印加される。

【0012】上述した各現像ローラ22、24、26及

び28は、光導電性ドラム50の外表面48に対して付

出されるトナー層の厚さの2倍より僅かに大きい距離を

隔てて光導電性ドラム50の表面48の上の固定位置

に注意深く位置決めされている。現像ローラ22、2

4、26及び28上のトナーの高さは、各トナーコン

パートメント14、16、18及び20内のドクターブ

レード(doctor blade)68、70、72及び74によっ

て調節される。現像ローラ22、24、26及び28上

のトナー高を現像ローラ22と光導電性ドラム50との

間のギャップの2分の1より小さくすることによって、

光導電性表面上に現れたカラートナーが次の現像剤ステ

ーションの下を通過する際に攪乱されるのを防ぐことが

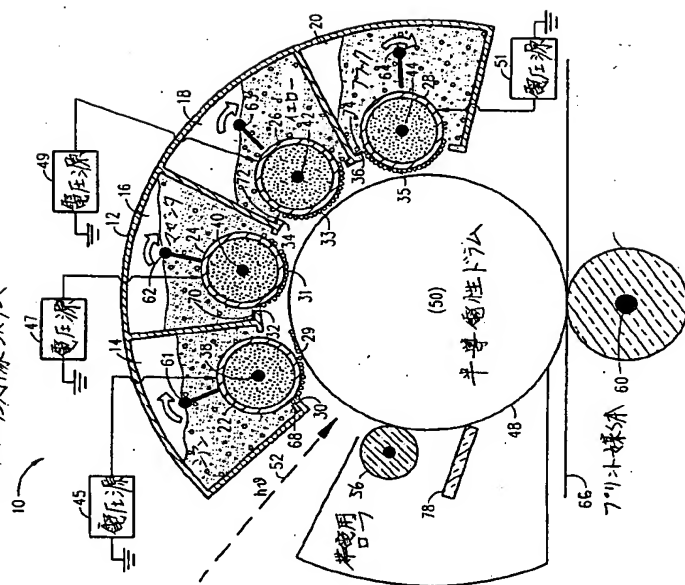
できる。従って、この手法は、トナーが外縁から印加さ

れる電界を用いてギャップを横切って射出されるように

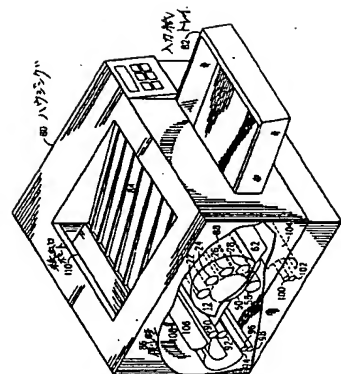
した本願出願人の LaserJet プリンタで用いられてい

【图 1】

カラープリンタ画像システム



【例2】



【公報種別】特許法第17条の2の規定による補正の掲載

【公開区分】第6部第2区分

【発行日】平成13年4月27日(2001.4.27)

【公開番号】特開平5-307310

【公開日】平成5年11月19日(1993.11.19)

【年通号数】公開特許公報5-3074

【出願番号】特開平4-354995

【国際特許分類第7版】

G03G 15/01 113

B41J 2/525

G03G 15/00 115

[F1]

B41J 3/00 B

G03G 15/01 113 Z

【手続補正書】

【提出日】平成11年12月17日(1999.12.17)

【手続補正1】

【補正対象書類名】明細書

【補正対象項目名】特許請求の範囲

【補正方法】変更

【補正内容】

【特許請求の範囲】

【請求項1】次の(イ)から(ハ)の工程からなる電子写真式カラープリント方法。

(イ) シアン、イエロー、マゼンタ、ブラックのカラートナーを供給し、(ロ) 前記トナーと光導電性ドラムの表面と間で前記光導電性ドラムの表面から予め定められた距離に設けられたシアン、イエロー、マゼンタ、ブラックの現像ローラを提供する手段と、(ハ) 前記現像ローラに接続され、前記現像ローラを回転しながら前記現像ローラを交流及び直流信号で選択的に駆動することによって帯電したカラートナーを前記現像ローラの表面に送り届け、もって前記カラートナーを前記光導電性ドラムの表面に選択的かつ静電的に付着させる工程を含むことを特徴とする電子写真式カラープリント方法。

【請求項2】請求項1記載の電子写真式カラープリント方法はさらに前記光導電性ドラムの表面から現像されたカラーイメージを露光するプリント媒体表面に順次転写し、前記プリント媒体は前記ドラムと転写ローラのあいだを行き来させる工程を含むことを特徴とする電子写真式カラープリント方法。

【請求項3】シアン、イエロー、マゼンタ、ブラックのカラートナーを供給する手段と、前記トナーと光導電性ドラムの表面と間で前記光導電性ドラムの表面から予め定められた距離に設けられたシアン、イエロー、マゼンタ、ブラックの現像ローラと、前記現像ローラに接続され、前記現像ローラを回転しながら

【補正対象書類名】明細書

【補正対象項目名】0012

【補正方法】変更

【補正内容】

【0012】上述した各現像ローラ22、24、26及び28は、光導電性ドラム50の外表面48に対して射出されるトナー層の厚さの2倍より値に大きい距離を隔てて光導電性ドラム50の表面48の上方の固定位置に注ぎ深く位置決めされている。現像ローラ22、24、26及び28上のトナーの高さは、各々トナーコンパートメント14、16、18及び20内のドクターブレード(doctor blade)68、70、72及び74によって調節される。現像ローラ22、24、26及び28上のトナー高を現像ローラ22と光導電性ドラム50との間のギャップの2分の1より小さくすることによって、光導電体表面上に現れたカラートナーが次の現像剤ステーションの下を通過する際に擾乱されるのを防ぐことができる。従って、この手法は、トナーが外部から印加される電界を用いてキャップを適切に射出されるようにした本願出願人のLaserJet(登録

商標) プリントで用いられている射出現像システムに適

用することができる。

【手続補正3】

【補正対象書類名】明細書

【補正対象項目名】0015

【補正方法】変更

【補正内容】

【0015】従って、その動作を見るに、プリント媒体62は、シアン、マゼンタ、イエロー及びブラックの各色毎に360°の回路を移動して、これらの色毎に形成したイメージが光導電性ドラム50の表面から媒体62へ順次転写される。プリント媒体62は一面の上面の各々に、以下に図2により説明する定着ローラ90と92の間に案内され、ここで合成カラーイメージがプリント媒体62の表面に定着された後、周知の紙送り制御技術を用いた出力紙集束トレイまたはピンへ送り込まれる。上述したカラープリント過程は、本願出願人による前記御するための適切な制御技術は、本願出願人による前記の特許出願に開示されている。

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-307310

(43)Date of publication of application : 19.11.1993

(51)Int.Cl. G03G 15/01

B41J 2/525

G03G 15/00

(21)Application number : 04-354995

(71)Applicant : HEWLETT PACKARD CO <HP>

(22)Date of filing : 17.12.1992

(72)Inventor : STORLIE CHRIS A

(30)Priority

Priority number : 91 812236

Priority date : 17.12.1991

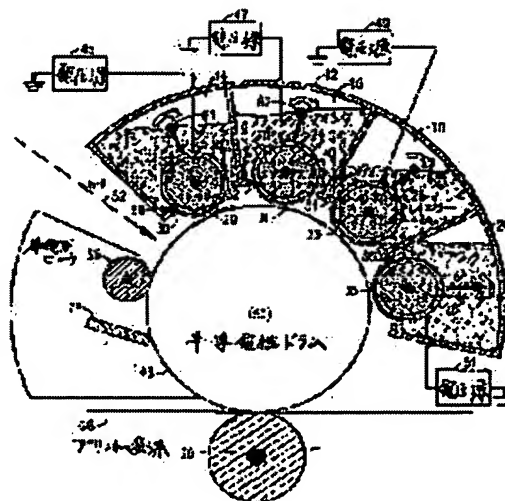
Priority country : US

(54) ELECTROPHOTOGRAPHIC COLOR PRINTING SYSTEM

(57)Abstract:

PURPOSE: To eliminate the need of moving a roller to/from a photoconductive drum at developing, in an electrophotographic color printer having a structure of sticking color toner to the roller and developing an electrostatic latent image on the photoconductive drum by the toner.

CONSTITUTION: The rollers 22, 24, 26 and 28 are rotated in compartments 14, 16, 18 and 20 with cyan, magenta, yellow and black toner stored respectively, and the rollers pass near the surface 48 of the drum 50 on which the electrostatic latent image is formed in a state where the toner thinly sticks to the surface of each roller. By applying AC and DC voltages from voltage sources 45 to 51 on the only roller (one of rollers 22 to 28) with desired color toner for developing stuck with this rotation of the drum 50, the color toner on the roller selectively jumps on to the opposed electrostatic latent image.



LEGAL STATUS

[Date of request for examination]

17.12.1999

[Date of sending the examiner's decision of rejection]

01.11.2002

[Kind of final disposal of application other than
the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision
of rejection]

[Date of requesting appeal against examiner's
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[Date of extinction of right]

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JAPANESE [JP,05-307310,A]

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TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION
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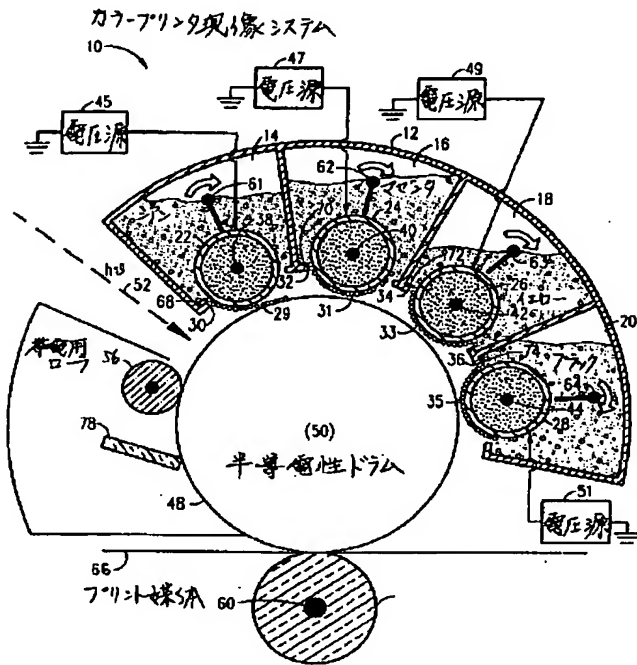
CLAIMS

[Claim(s)]

[Claim 1] A means to supply the electrophotography formula color-print system:(a) cyanogen which comes to contain the following (a) or (c), yellow, a Magenta, and the color toner of black;
(b) The cyanogen prepared in the fixed position of the distance which is between the aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, developing roller of black;
(c) A means to connect with the aforementioned developing roller, to send and have the color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, rotating the aforementioned developing roller in the front face of the aforementioned developing roller, and to inject the aforementioned color toner to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic.

[Translation done.]

Drawing selection [R presentativ drawing] ☒



[Translation done.]

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[JP,05-307310,A]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the injected type electrophotography formula color printer (projection type of electrophotographic color) which used the developing roller of a position cover half for the wide sense in more detail about the electrophotography formula color printer known also as a LASER beam printer.

[0002]

[Description of the Prior Art] The various paper kinematic-control methods which may be useful in order to control the medium printed in this application Invention of a name called the application number 07th / "the method and equipment" for compensating the paper contraction and misalignment in an electrophotography formula color-print of No. 561,831 of August 2, 1990 application, Invention of a name called the application number 07th / "how to have been improved for reducing curl of the medium in an electro photographic printer and equipment" of No. 758,011 of September 12, 1991 application, And it is indicated by invention of a name called "the electrophotography formula color-print method and equipment" of application (case No.189155) of application in December, 1991.

[0003] in the field of an electrophotography formula color-print, in order to make cyanogen, yellow, a Magenta, and the color toner of black adhere to the front face of a photoconductivity drum, each developing roller of cyanogen, yellow, a Magenta, and black is moved, and it approaches -- contacting [a photoconductivity drum and] and making it break away is known These color toners are made to adhere to the front face of a photoconductivity drum alternatively, negatives are developed there, a color image is produced on the front face of a photoconductivity drum, and, next, these color images are imprinted one by one to the print medium which touches a drum.

[0004] One fault of the color development system by such conventional technology of contacting and making it seceding from these developing rollers to the front face of a photoconductivity drum is that a rotation carousel is needed in order the cam driven by the motor in order to control physical movement of a developing roller is needed or to contact the developing roller of cyanogen, a Magenta, yellow, and black to a photoconductivity drum one by one. The fault on the machine relevant to the mechanical precision which in any case is needed in order to give movement controlled highly to these developing rollers, and high cost follows. Therefore, what this invention aims at is canceling the fault of the electrophotography formula color-print by the conventional technology which was mentioned above.

[0005]

[Objects of the Invention] The general purposes of this invention main again are to offer a new and improved injection [in which it has the new composition using the developing roller which was made to approach the front face of a photoconductivity drum and was prepared in the fixed position] type electrophotography formula color printer. If it does in this way, it is not

necessary to give mechanical movement except rotation to these developing rollers, and the above faults which accompany the carousel and cam-action developing roller of the conventional technology in a color-print system by this method will be canceled.

[0006] Other purposes of this invention are the electrophotography formula color printers of a kind which was mentioned above, and they are comparatively simple and economical, and its reliability of operation is high, and they are to offer the new and improved electrophotography formula color printer which made moving part and the need for maintenance as small as possible.

[0007] Other purposes of this invention are the electrophotography formula color printers of a kind and the electrophotography formula color-print methods which were mentioned above, and since a color flat surface is put mutually correctly, the position and form of a photoconductivity drum are to offer the new and improved color printer and the color-print method which is not so important.

[0008]

[Summary of the Invention] In order to attain the above-mentioned purpose, in the one example of this invention Especially, the front face of a photoconductivity drum is made to approach and cyanogen, yellow, a Magenta, and the color toner of black are formed.; cyanogen, Yellow, The developing roller of a Magenta and black the fixed position in the distance which is between the color toners and the photoconduction sides of a drum which were mentioned above, and was beforehand defined from the front face of a photoconductivity drum -- preparing --; -- these developing rollers, rotating simultaneously each developing roller mentioned above within each color toner compartment It drives alternatively by an alternating current and the direct current signal, and a toner is alternatively injected to electrostatic to the front face where the photoconductivity drum approached from the front face of a developing roller by this (project). By using this technology, cyanogen, yellow, a Magenta, and the color toner of black are developed one by one after this on the front face of the photoconductivity drum on which it has discharged alternatively using the laser beam beam or the equivalent source of a development signal. Next, the image developed within the color plane is imprinted one by one to the front face of a photoconductivity drum, and the front face of the print medium which passes through between the approaching imprint rollers.

[0009] The outline of this invention mentioned above will be better understood with the advantage accompanying the new feature and new it from the following description of an example with this invention suitable in a drawing shown notionally.

[0010]

[Example] In drawing 1 , the fixed position and the carousel 12 which does not get blocked and rotate which has two or more color toner compartments 14, 16, 18, and 20 of a taper configuration like illustration are contained in the color printer development system in which the whole is shown with a sign 10. One developing rollers 22, 24, 26, and 28 attached in the fixed position which each of these color toner compartments 14, 16, 18, and 20 held the coloring toner of cyanogen, a Magenta, and yellow ** black, respectively, and approached the openings 30, 32, 34, and 36 of the bottom wall of each of these taper-like compartments 14, 16, 18, and 20 in the interior possible [rotation] are formed, respectively.

[0011] The rotation drive of each developing rollers 22, 24, 26, and 28 is carried out around those medial axes 38, 40, 42, and 44, respectively, and each of these rollers are connected to the separate voltage sources 45, 47, 49, and 51, respectively. The voltage generated on the developing roller as which either of the rollers 22, 24, 26, or 28 was chosen by these voltage sources 45, 47, 49, and 51 consists of an alternating current component and a dc component. A dc component is abbreviation-400V and should be set up between the voltage of -100V of the latent-image field on the front face 48 of the photoconductivity drum 50, and the voltage of -600V of a non-imaging field. Thus, the set-up voltage drives the toners 29, 31, 33, and 35 charged in negative by electric field, and it is made to appear in the image field on the

photoconductivity drum 50. furthermore, Photographic Science and Engineering It was indicated in a volume 26, No. 5, and ten September, 1982 / months. Takahaski It is based on others.

"Mechanism of Canon Toner Projection Developme nt" ** -- in order to strengthen the appearance of an image as explained in detail into the paper of the title to say, the alternating voltage of about 200Hz and 1000Vpp is impressed

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades 68, 70, 72, and 74 in 20 (doctor blade). It can prevent being disturbed in case the color toner which appeared on the photo-conductor front face passes through the bottom of the next developer station by making developing rollers 22, 24, and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50. Therefore, this technique is ***** which a toner crosses a gap using the electric field impressed from the outside, and was made to be injected. LaserJet It is applicable to the injection development system used by the printer.

[0013] If this technique is used, when developing rollers 22, 24, 26, and 28 will move within compartments 14, 16, and 18 and 20 in near cyanogen, a Magenta, yellow, and a black toner the toner magnetically drawn and drawn by the colored toner to electrostatic on the front face of these rollers again -- next, only when an alternating current and a direct current signal are alternatively impressed to one of the requests of these developing rollers, it is injected according to the force of static electricity to the front face 48 of the photoconductivity drum 50. Thus, each coloring toner is alternatively injected on the front face of the photoconductivity drum 50, and the latent image produced by the laser beam 52 from a laser light source (not shown) on the front face of the photoconductivity drum 50 appears as a color image. As such an injected type development system, it quoted upwards, for example. Takahaski It is indicated in other papers and there are some which were developed by canon incorporated company.

[0014] The color development system shown in drawing 1 has the toner stirring blades 61, 62, 63, and 64 which were prepared in each compartments 14, 16, and 18 of cyanogen, yellow, a Magenta, and black, and the illustration position in 20 and which can be rotated again, and in order to maintain the homogeneity of the toner in the front face of developing rollers 22, 24, 26, and 28, these stirring blades act so that stirring of the amount of requests may be performed within a toner compartment. The color development system of drawing 1 has the roller 56 for electrification for giving the electrostatic suction force of desired level to the color toner which you are made to inject by each while giving the electrostatic charge of request level on the front face of the photoconductivity drum 50. The injection system 10 of drawing 1 has the imprint roller 58 attached still more possible [rotation around a medial axis 60], and this imprint roller is positioned so that the front face 48 of the photoconductivity drum 50 may be approached very much in the position through which the print medium 66 or other suitable middle imprint members (not shown) pass like illustration.

[0015] Therefore, the print medium 66 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 66. The print medium 66 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 66 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent.

[0016] Next, the housing 80 of an electrophotography formula color printer is shown in drawing

2 , and it is an applicant for this patent in this. LaserJet The input paper tray 82 of a gestalt and the output paper uptake bottle 84 which are used by the printer now are prepared. The side attachment wall 86 of the near side of printer housing of illustration excises the portion it is indicated with a sign 88 that can see the rough physical relationship over the form guide mechanism for controlling paper movement of the color development system of drawing 1 in the interior, and is drawn. Of course, paper 66 continues between the photoconductivity drum 50 and the imprint rollers 58, and it lets it pass 4 times as the development drum 50 receives a color toner from the rollers 22, 24, 26, and 28 which inject the color toner with which simultaneous impression of the alternating current explained above with reference to drawing 1 and the direct current is carried out including the photoconductivity drum 50 attached by these form guide mechanisms approaching the above-mentioned imprint roller 58.


[0017] The form guide system shown in drawing 2 contains the output fixing rollers (output fuser roller) 90 and 92 of a couple further. These fixing rollers 90 and 92 are the processes over the 360-degree above-mentioned path which happens continuously 4 times, and weld [62] the color image of cyanogen, yellow, a Magenta, and black one by one by the well-known method. the form guide to which, as for paper 62, the 1st curved first at this process -- it sends in accordance with the inside of a member 94 -- having -- subsequently -- between the form guide idlers 96 and 98 of the 1st couple bottom -- a passage -- further -- the 2nd -- having curved -- a form -- a guide -- a member 104 is sent through between the form guide idlers 100 and 102 of the 2nd couple arranged around the paper deviation which paper 62 became upward from the fixing rollers 90 and 92 when paper 62 completed 3 times of the processes which pass along above-mentioned 360-degree path, and which happen continuously -- it is moved in the direction of an arrow 108 along the front face of a member 106, and is sent out from the paper exit port 110 by the side of the far edge of the paper uptake bottle 84

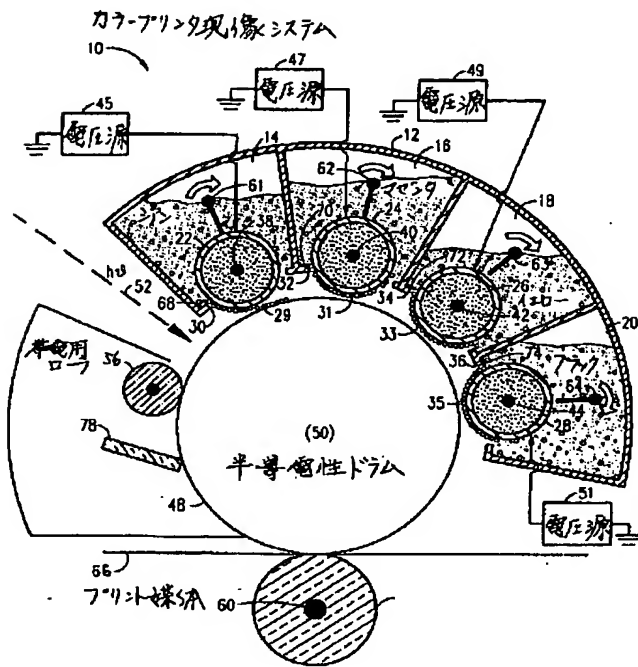
[0018] Various corrections can be added to the example mentioned above, without deviating from the pneuma and the range of this invention. There is no color development system of this invention in which it simplified to drawing 1 and 2, and the outline was shown what meant limited ***** to use only by the method color mixture method of a decrease of the Magenta and black of a certain specific hardware, a design or cyanogen, and yellow for the purpose of giving instantiation explanation of the general principle of color image development operation. Therefore, although the gestalt of the simplified notional drawing explained the suitable example written here for such a reason, some are not limited to specific constitutional hardware and the designer and engineer who became skilled in the technology concerned can make the design, selection, and change. therefore, this application -- this contractor can perform many mechanical design changes to drawing 1 and drawing 2 , without deviating from a claim

[0019]

[Effect] Since it becomes unnecessary to make it move so that a photoconductivity drum may be made to contact and secede from a developing roller as explained to the detail above according to this invention, a design, manufacture, and maintenance can offer an easy electrophotography formula color printer.

[Translation done.]

Drawing selection [R presentativ drawing] 



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JAPANESE

[JP,05-307310,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE INVENTION
TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION
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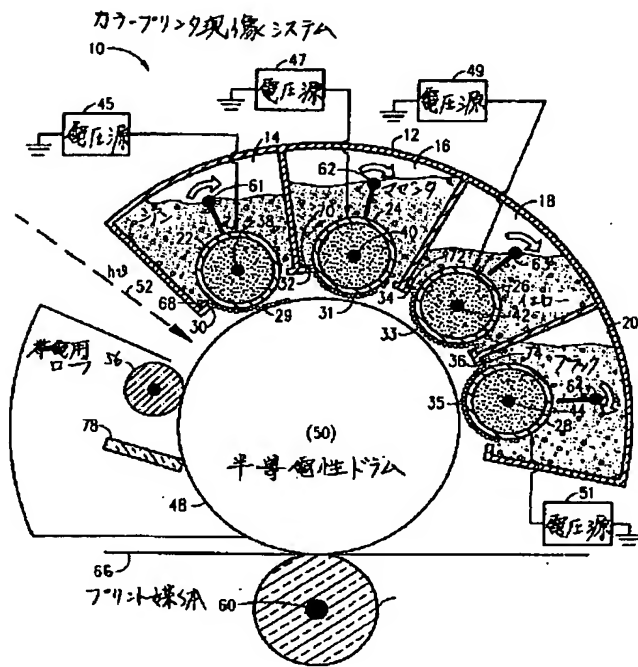
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TECHNICAL FIELD

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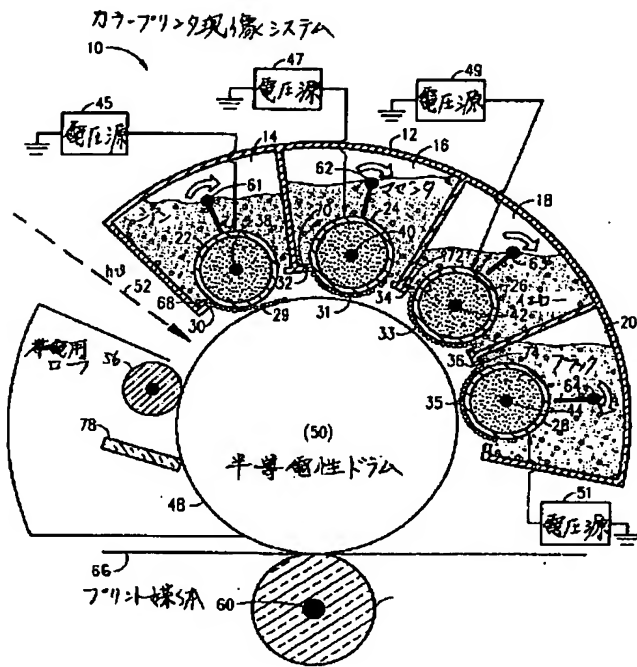
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[0004] One fault of the color development system by such conventional technology of contacting and making it seceding from these developing rollers to the front face of a photoconductivity drum is that a rotation carousel is needed in order the cam driven by the motor in order to control physical movement of a developing roller is needed or to contact the developing roller of cyanogen, a Magenta, yellow, and black to a photoconductivity drum one by one. The fault on the machine relevant to the mechanical precision which in any case is needed in order to give movement controlled highly to these developing rollers, and high cost follows. Therefore, what this invention aims at is canceling the fault of the electrophotography formula color-print by the conventional technology which was mentioned above.

[0005]

[Objects of the Invention] The general purposes of this invention main again are to offer a new and improved injection [in which it has the new composition using the developing roller which was made to approach the front face of a photoconductivity drum and was prepared in the fixed position] type electrophotography formula color printer. If it does in this way, it is not necessary to give mechanical movement except rotation to these developing rollers, and the above faults which accompany the carousel and cam-action developing roller of the conventional technology in a color-print system by this method will be canceled.

[0006] Other purposes of this invention are the electrophotography formula color printers of a kind which was mentioned above, and they are comparatively simple and economical, and its reliability of operation is high, and they are to offer the new and improved electrophotography formula color printer which made moving part and the need for maintenance as small as

possible.

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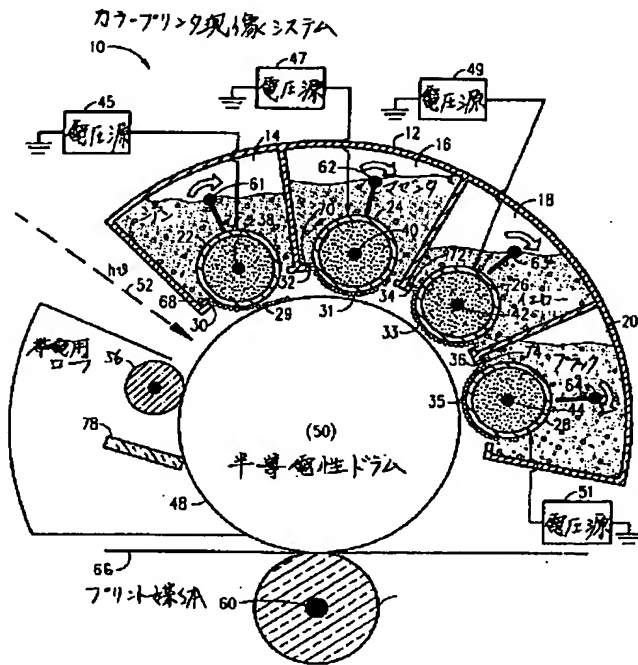
[0008]

[Summary of the Invention] In order to attain the above-mentioned purpose, it is at one example of this invention. Especially, the front face of a photoconductivity drum is made to approach and cyanogen, yellow, a Magenta, and the color toner of black are formed.; cyanogen, Yellow, The developing roller of a Magenta and black the fixed position in the distance which is between the color toners and the photoconduction sides of a drum which were mentioned above, and was beforehand defined from the front face of a photoconductivity drum -- preparing --; -- these developing rollers, rotating simultaneously each developing roller mentioned above within each color toner compartment It drives alternatively by an alternating current and the direct current signal, and a toner is alternatively injected to electrostatic to the front face where the photoconductivity drum approached from the front face of a developing roller by this (project). By using this technology, cyanogen, yellow, a Magenta, and the color toner of black are developed one by one after this on the front face of the photoconductivity drum on which it has discharged alternatively using the laser beam beam or the equivalent source of a development signal. Next, the image developed within the color plane is imprinted one by one to the front face of a photoconductivity drum, and the front face of the print medium which passes through between the approaching imprint rollers.

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[JP,05-307310,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD EFFECT OF THE INVENTION
TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION
or AMENDMENT

[Translation done.]

* NOTICES *

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3.In the drawings, any words are not translated.

EXAMPLE

[Example] In drawing 1 , the fixed position and the carousel 12 which does not get blocked and rotate which has two or more color toner compartments 14, 16, 18, and 20 of a taper configuration like illustration are contained in the color printer development system in which the whole is shown with a sign 10. One developing rollers 22, 24, 26, and 28 attached in the fixed position which each of these color toner compartments 14, 16, 18, and 20 held the coloring toner of cyanogen, a Magenta, and yellow ** black, respectively, and approached the openings 30, 32, 34, and 36 of the bottom wall of each of these taper-like compartments 14, 16, 18, and 20 in the interior possible [rotation] are formed, respectively.

[0011] The rotation drive of each developing rollers 22, 24, 26, and 28 is carried out around those medial axes 38, 40, 42, and 44, respectively, and each of these rollers are connected to the separate voltage sources 45, 47, 49, and 51, respectively. The voltage generated on the developing roller as which either of the rollers 22, 24, 26, or 28 was chosen by these voltage sources 45, 47, 49, and 51 consists of an alternating current component and a dc component. A dc component is abbreviation-400V and should be set up between the voltage of -100V of the latent-image field on the front face 48 of the photoconductivity drum 50, and the voltage of -600V of a non-imaging field. Thus, the set-up voltage drives the toners 29, 31, 33, and 35 charged in negative by electric field, and it is made to appear in the image field on the photoconductivity drum 50. furthermore, Photographic Science and Engineering It was indicated in a volume 26, No. 5, and ten September, 1982 / months. Takahaski It is based on others. "Mechanism of Canon Toner ProjectionDevelopme nt" ** -- in order to strengthen the appearance of an image as explained in detail into the paper of the title to say, the alternating voltage of about 200Hz and 1000Vpp is impressed

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades 68, 70, 72, and 74 in 20 (doctor blade). It can prevent being disturbed in case the color toner which appeared on the photo-conductor front face passes through the bottom of the next developer station by making developing rollers 22, 24, and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50. Therefore, this technique is ***** which a toner crosses a gap using the electric field impressed from the outside, and was made to be injected. LaserJet It is applicable to the injection development system used by the printer.

[0013] If this technique is used, when developing rollers 22, 24, 26, and 28 will move within compartments 14, 16, and 18 and 20 in near cyanogen, a Magenta, yellow, and a black toner the toner magnetically drawn and drawn by the colored toner to electrostatic on the front face of these rollers again -- next, only when an alternating current and a direct current signal are

alternatively impressed to one of the requests of these developing rollers, it is injected according to the force of static electricity to the front face 48 of the photoconductivity drum 50. Thus, each coloring toner is alternatively injected on the front face of the photoconductivity drum 50, and the latent image produced by the laser beam 52 from a laser light source (not shown) on the front face of the photoconductivity drum 50 appears as a color image. As such an injected type development system, it quoted upwards, for example. Takahashi It is indicated in other papers and there are some which were developed by canon incorporated company.

[0014] The color development system shown in drawing 1 has the toner stirring blades 61, 62, 63, and 64 which were prepared in each compartments 14, 16, and 18 of cyanogen, yellow, a Magenta, and black, and the illustration position in 20 and which can be rotated again, and in order to maintain the homogeneity of the toner in the front face of developing rollers 22, 24, 26, and 28, these stirring blades act so that stirring of the amount of requests may be performed within a toner compartment. The color development system of drawing 1 has the roller 56 for electrification for giving the electrostatic suction force of desired level to the color toner which you are made to inject by each while giving the electrostatic charge of request level on the front face of the photoconductivity drum 50. The injection system 10 of drawing 1 has the imprint roller 58 attached still more possible [rotation around a medial axis 60], and this imprint roller is positioned so that the front face 48 of the photoconductivity drum 50 may be approached very much in the position through which the print medium 66 or other suitable middle imprint members (not shown) pass like illustration.

[0015] Therefore, the print medium 66 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 66. The print medium 66 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 66 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent.

[0016] Next, the housing 80 of an electrophotography formula color printer is shown in drawing 2, and it is an applicant for this patent in this. LaserJet The input paper tray 82 of a gestalt and the output paper uptake bottle 84 which are used by the printer now are prepared. The side attachment wall 86 of the near side of printer housing of illustration excises the portion it is indicated with a sign 88 that can see the rough physical relationship over the form guide mechanism for controlling paper movement of the color development system of drawing 1 in the interior, and is drawn. Of course, paper 66 continues between the photoconductivity drum 50 and the imprint rollers 58, and it lets it pass 4 times as the development drum 50 receives a color toner from the rollers 22, 24, 26, and 28 which inject the color toner with which simultaneous impression of the alternating current explained above with reference to drawing 1 and the direct current is carried out including the photoconductivity drum 50 attached by these form guide mechanisms approaching the above-mentioned imprint roller 58.

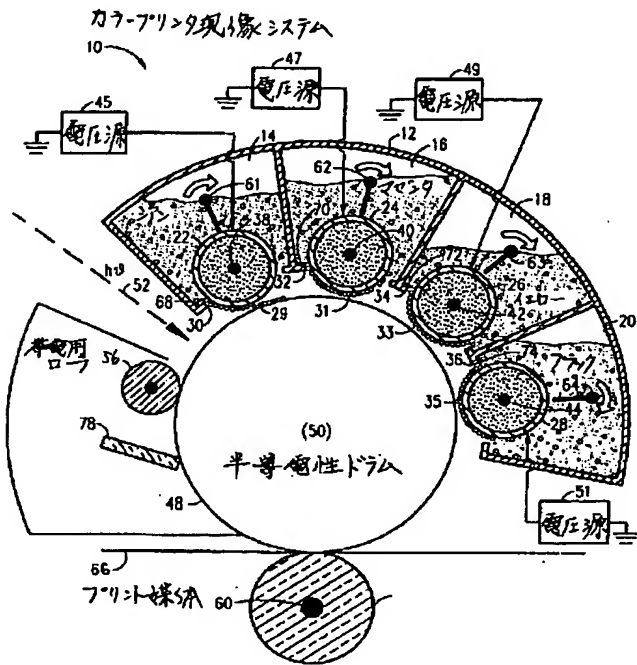
[0017] The form guide system shown in drawing 2 contains the output fixing rollers (output fuser roller) 90 and 92 of a couple further. These fixing rollers 90 and 92 are the processes over the 360-degree above-mentioned path which happens continuously 4 times, and weld [62] the color image of cyanogen, yellow, a Magenta, and black one by one by the well-known method. the form guide to which, as for paper 62, the 1st curved first at this process -- it sends in accordance with the inside of a member 94 -- having -- subsequently -- between the form guide idlers 96 and 98 of the 1st couple bottom -- a passage -- further -- the 2nd -- having curved -- a form -- a guide -- a member 104 is sent through between the form guide idlers 100 and 102 of the 2nd couple arranged around the paper deviation which paper 62 became upward from the fixing rollers 90 and 92 when paper 62 completed 3 times of the processes which pass

along above-mentioned 360-degree path, and which happen continuously -- it is moved in the direction of an arrow 108 along the front face of a member 106, and is sent out from the paper exit port 110 by the side of the far edge of the paper uptake bottle 84

[0018] Various corrections can be added to the example mentioned above, without deviating from the pneuma and the range of this invention. There is no color development system of this invention in which it simplified to drawing 1 and 2, and the outline was shown what meant limited ***** to use only by the method color mixture method of a decrease of the Magenta and black of a certain specific hardware, a design or cyanogen, and yellow for the purpose of giving instantiation explanation of the general principle of color image development operation. Therefore, although the gestalt of the simplified notional drawing explained the suitable example written here for such a reason, some are not limited to specific constitutional hardware and the designer and engineer who became skilled in the technology concerned can make the design, selection, and change. therefore, this application -- this contractor can perform many mechanical design changes to drawing 1 and drawing 2 , without deviating from a claim

[Translation done.]

Drawing selection [Representative drawing] 



[Translation done.]

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JAPANESE

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The notional cross section showing the color development system by one example of this invention.

[Drawing 2] The perspective diagram showing how the color development system of drawing 1 is held into a color laser printer.

[Description of Notations]

10: Color printer development system

12: Carousel

14, 16, 18, 20: Color toner compartment

22, 24, 26, 28: Developing roller

29, 31, 33, 35: Toner

30, 32, 34, 36: Opening

38, 40, 42, 44: Medial axis

45, 47, 49, 51: Voltage source

48: Front face

50: Photoconductivity drum

58: Imprint roller

56: The roller for electrification

60: Medial axis

61, 62, 63, 64: Toner stirring blade

66: Print medium

68, 70, 72, 74: Doctor blade

80: Housing

82: Input paper tray

84: Output paper uptake bottle

86: Side attachment wall

90 92: Fixing roller

94,104:forms guide -- a member

96 98,100,102: Form guide idler

106: a paper deviation -- a member

110: Paper exit port

[Translation done.]



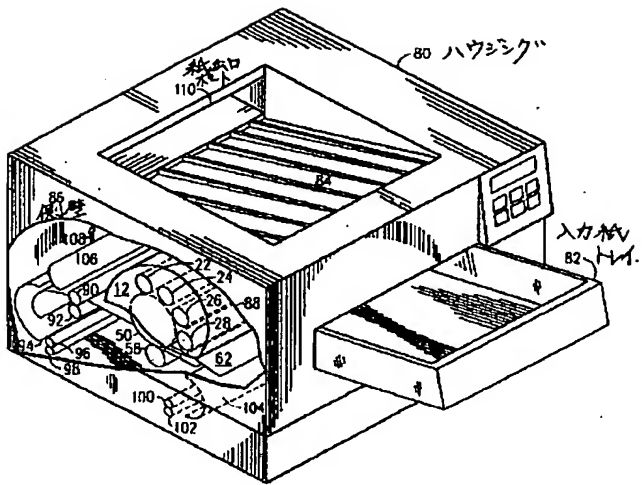
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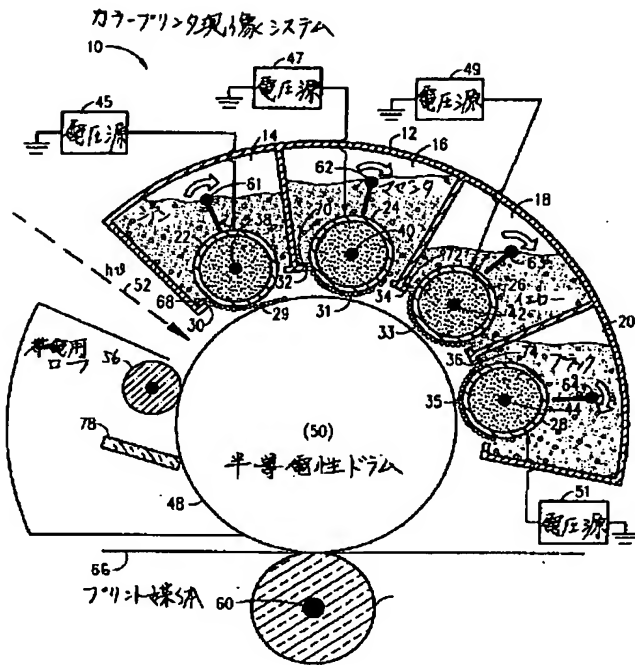
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[Translation done.]

Drawing selection [Repr sentative drawing] 



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[Back to original](#)

[JP,05-307310,A]

[Translation done.]

1. Amendment April 27, Heisei 13 (2001)

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CORRECTION or AMENDMENT

[Official Gazette Type] Printing of amendment by the convention of 2 of Article 17 of patent law

[Section partition] The 2nd partition of the 6th section

[Date of issue] April 27, Heisei 13 (2001. 4.27)

[Publication No.] JP,5-307310,A

[Date of Publication] November 19, Heisei 5 (1993. 11.19)

[**** format] Open patent official report 5-3074

[Filing Number] Japanese Patent Application No. 4-354995

[The 7th edition of International Patent Classification]

G03G 15/01 113

B41J 2/525

G03G 15/00 115

[FI]

B41J 3/00 B

G03G 15/01 113 Z

[Procedure revision]

[Filing Date] December 17, Heisei 11 (1999. 12.17)

[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim

[Method of Amendment] Change

[Proposed Amendment]

[Claim(s)]

[Claim 1] The electrophotography formula color-print method which consists of a process of the following (b) to a (c).

(b) Supply cyanogen, yellow, a Magenta, and the color toner of black. The cyanogen prepared in the fixed position of the distance which is between the (b) aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, and a means to offer the developing roller of black, The color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, connecting with the (c) aforementioned developing roller and rotating the aforementioned developing roller is sent into

the front face of the aforementioned developing roller. It has and the aforementioned color toner is injected to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic.

[Claim 2] It is the electrophotography formula color-print method which the electrophotography formula color-print method according to claim 1 imprints the color image further developed from the front face of the aforementioned photoconductivity drum one by one on an adjoining print medium front face, and is characterized by the aforementioned print medium including the process which makes between the aforementioned drum and imprint rollers go back and forth.

[Claim 3] The electrophotography formula color-print system characterized by providing the following A means to supply cyanogen, yellow, a Magenta, and the color toner of black The cyanogen prepared in the fixed position of the distance which is between the aforementioned toner and the front face of a photoconductivity drum, and was beforehand defined from the front face of the aforementioned photoconductivity drum, yellow, a Magenta, the developing roller of black A means to connect with the aforementioned developing roller, to send and have the color toner charged by driving the aforementioned developing roller alternatively by an alternating current and the direct current signal, rotating the aforementioned developing roller in the front face of the aforementioned developing roller, and to inject the aforementioned color toner to alternative on the front face of the aforementioned photoconductivity drum, and electrostatic

[Claim 4] It is the electrophotography formula color-print system which an electrophotography formula color-print system according to claim 3 imprints the color image further developed from the front face of the aforementioned photoconductivity drum one by one on an adjoining print medium front face, and is characterized by the aforementioned print medium including a means to make between the aforementioned drum and imprint rollers go back and forth.

[Claim 5] An electrophotography formula color-print system according to claim 5 is an electrophotography formula color-print system characterized by including the height adjustment doctor blade characterized by preparing so that each of the aforementioned developing roller may be adjoined further, and controlling the amount of a color toner to the **** aforementioned photo-conductor drum.

[Claim 6] An electrophotography formula color-print system according to claim 4 is a means to which 360-degree path for the sequential imprint of the aforementioned print medium of each aforementioned color image is moved further.

The electrophotography formula color-print system characterized by including a means by which pass a fixing roller and even an output paper collection tray or a bottle guides the synthetic color image in which negatives were developed on the aforementioned print medium.

[Claim 7] An electrophotography formula color-print system according to claim 6 is an electrophotography formula color-print system characterized by including the height adjustment doctor blade characterized by preparing so that each of the aforementioned developing roller may be adjoined further, and controlling the amount of a color toner to the **** aforementioned photo-conductor drum.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0012

[Method of Amendment] Change

[Proposed Amendment]

[0012] Each developing rollers 22, 24, 26, and 28 mentioned above separate a slightly larger distance than the double precision of the toner layer thickness injected to the outside surface 48 of the photoconductivity drum 50, and are positioned carefully in the upper fixed position of the front face 48 of the photoconductivity drum 50. The height of the toner on developing rollers 22, 24, and 26 and 28 is respectively adjusted by the toner compartments 14, 16, and 18 and the doctor blades (doctorblade) 68, 70, 72, and 74 in 20. By making developing rollers 22, 24,

- and 26 and the toner quantity on 28 smaller than 1/2 of the gap between a developing roller 22 and the photoconductivity drum 50, in case the color toner which appeared on the photo-conductor front face passes through the bottom of the next developer station, it can prevent carrying out disturbance. Therefore, a toner can apply this technique to the injection development system used by an applicant's for this patent LaserJet (registered trademark) printer which crosses a gap using the electric field impressed from the outside, and was made to be injected.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0015

[Method of Amendment] Change

[Proposed Amendment]

[0015] Therefore, the print medium 62 moves a 360-degree path for every color of cyanogen, a Magenta, yellow, and black for seeing the operation, and the image discovered in each of these colors is imprinted one by one from the front face of the photoconductivity drum 50 to a medium 62. The print medium 62 is sent into the well-known output paper uptake tray or well-known bottle using an ejection / control technology, after showing around among the fixing rollers 90 and 92 explained by drawing 2 below and fixing each of a series of processes to a synthetic color image on the front face of the print medium 62 here. The suitable control technology for controlling movement of the paper in the color-print process mentioned above is indicated by the aforementioned patent application by the applicant for this patent.

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